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RESEARCH ARTICLE

The first record of the mite family Parholaspididae from Türkiye (Parasitiformes: Mesostigmata)

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ASBTRACT: In this study, female specimens of *Gamasholaspis browningi* were collected under hazelnut trees in a tea garden in Türkiye and described as a new record of the Turkish mite fauna. It was determined that this is the first representative of the family in Türkiye. In addition, an overview of the current status of the Turkish eviphidoid fauna is given.

Keywords: Acari, description, *Gamasholaspis browningi*, hazelnut tree, litter
Zoobank: https://zoobank.org/5A7BCD20-8C43-412D-910A-E4C68CAF9C5D

INTRODUCTION

The order Mesostigmata consists of about 110 families and more than 11000 species worldwide in three suborders, Sejida Kramer, 1885, Trigynaspida Camin and Gorirossi, 1955 and Monogynaspida Camin and Gorirossi, 1955 (Balileu et al., 2011; Walter and Proctor, 2013). In Türkiye, there is little information on the mesostimatic mites, but some groups within the Mesostigmata have been on the rise in recent years, such as the superfamily Eviphidoidea Berlese, 1913 is one of them (Erman et al., 2007). According to Beaulieu et al. (2011), Eviphidoidea comprises five families, namely Eviphididae Berlese, 1913, Macrochelidae Vitzthum, 1930, Pachylaelapidae Berlese, 1913, Parholaspididae Evans, 1956 and Leptolaelapidae Karg, 1978. This superfamily is represented worldwide with more than 1050 species, in Türkiye there are about 78 species in four families (Eviphididae with 10 species, Macrochelidae with 35 species, Pachylaelapidae with 32 species, Parholaspididae with one species in this study), while no species of the Leptolaelapidae have been recorded so far (Özbek 2017, 2023a, b). The present taxonomic study is not sufficient to cover the entire species diversity of this superfamily in Türkiye.

The Parholaspididae is a family of free-living predatory mites. They are usually found in the soil, in organic litter, in decaying plant material, in moss and in tree hollows. The members of the family are mainly distributed in the Oriental region, although some members are also found in the Palaearctic, Nearctic and Neotropical regions. Taxonomically, the family was initially listed by Evans (1956) as the subfamily Parholaspinae within the family Macrochelidae Vitzthum, 1930, but later Krantz (1960) elevated the Parholaspinae to the family level. In total, the family comprises 163 species within 14 genera around the world (Quintero-Gutiérrez and Halliday, 2021). In Türkiye, no species from the Parholaspididae family are known to date. The main aim of this study is to add new records to the mite fauna of Türkiye and to contribute to the knowledge of the species diversity of Eviphidoidea in Türkiye.

MATERIALS AND METHODS

The mites were collected by sieving decomposing organic material. The mites were extracted using modified Berlese-Tullgren funnels and mounted in Hoyer's medium according to the methods of Walter and Krantz (2009). Some specimens of the species were dissected for detailed examination of some structures for identification. The specimens were examined, illustrated, photographed, and measured using an Olympus BX63 upright microscope and an Olympus DP73 camera. The terminology of dorsal and ventral setae used in this paper follows those of Lindquist and Evans (1965) and Moraza and Peña (2006). The specimens are deposited at EBYU (Acarology Laboratory of Erzincan Binali Yıldırım University, Erzincan, Türkiye).

RESULTS

Family Parholaspididae Evans, 1956

Genus *Gamasholaspis* Berlese, 1904

***Gamasholaspis browningi* (Bregetova and Koroleva)**

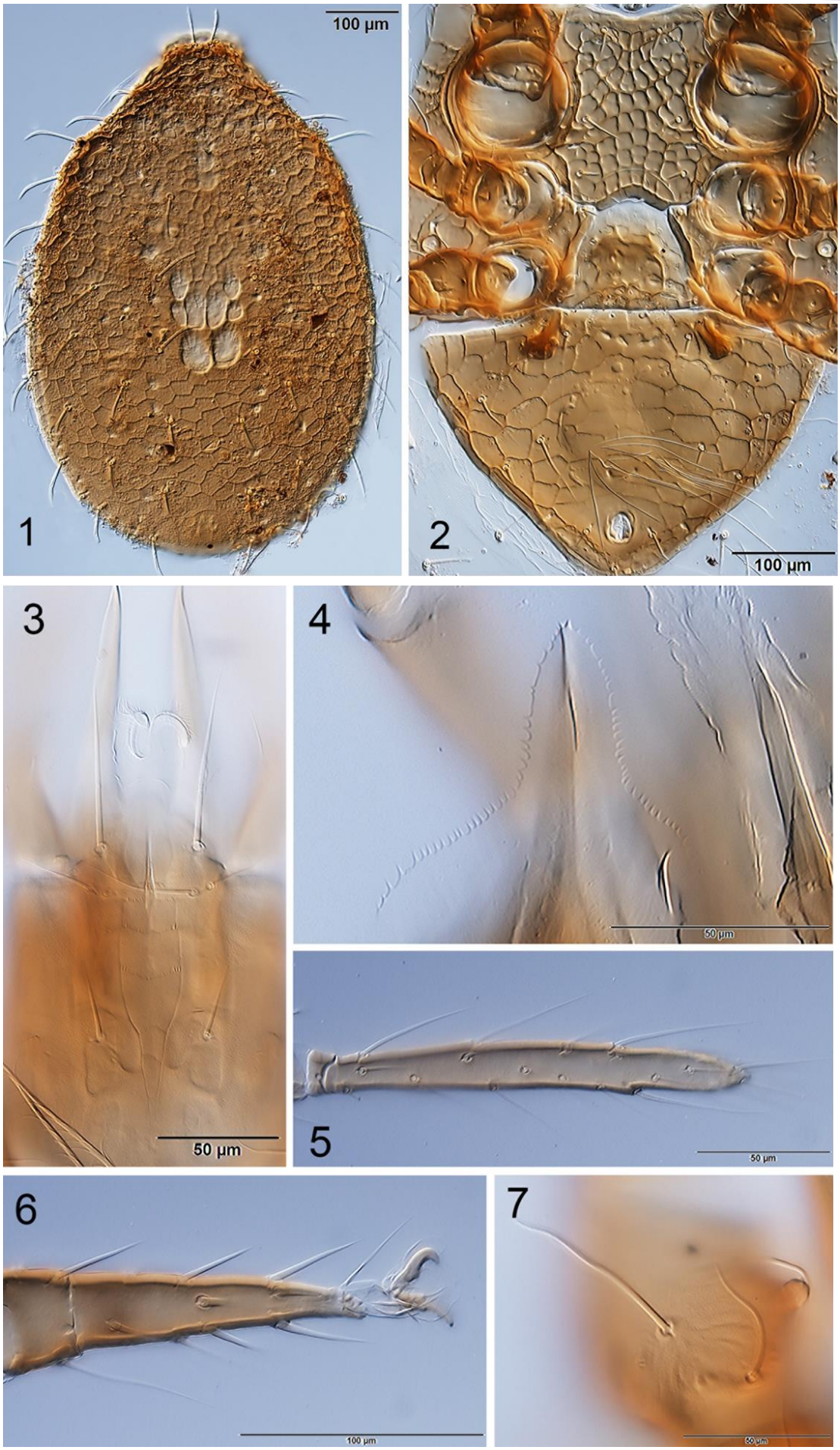
Evansolaspis browningi Bregetova and Koroleva, 1960: 54.

Gamasholaspis browningi — Petrova, 1977: 338; Marchenko, 2002: 41; Kontschán et al., 2014: 20; Quintero-Gutiérrez and Halliday, 2021: 416; Hajizadeh, 2022: 230.

Specimens examined: Five females from litter under hazelnut tree in a tea garden, Fındıkoba village, Of town, Trabzon province, Türkiye, 39°36'N 38°39'E, 3 May 2015.

Description. Female (n=5) (Figures 1-7)

Dorsum (Fig. 1). Dorsal shield oval, 720-760 long, 480-490 wide at level of widest point; covered with punctations and reticulations, with 29 pairs of setae, all setae expanded in distal ½, length 50-80 long (*j1* 50-60, *J*5 about 50). Peritremes relatively shortened, anterior end not reaching dorsal surface of idiosoma.



Figures 1-7. *Gamasholaspis browningi* (female). 1. Dorsal shield, 2. Ventral shields, 3. Ventral surface of gnathosoma, 4. Epistome, 5. Tarsus I, 6. Tarsus II, 7. Ventral side of femur II.

Table 1. Leg setation of *Gamasholaspis browningi* (female**).**

Leg	coxa	trochanter	femur	genu	tibia	tarsus
I	2	4	13	11	12	not counted
II	2	5	11	11	10	18
III	2	5	6	8	8	18
IV	1	5	6	8	8	18

Venter (Fig. 2). A pair of well sclerotized presternal shields present. Sternal shield 180-186 long, 120-130 wide at level of coxae II, surface ornamented with well-defined polygonal patterns, two pairs of lyrifissures and three pairs of needle-like setae of equal length (*st1-3* 60-70). Metasternal shield fused with endopodal shield and with a pair of needle-like setae, *st4*. Genital shield helmet-shaped, 100-115 long and 150-160 wide, its surface ornamented with polygonal patterns and with a pair of needle-like setae, st5. Ventrianal shield triangular, 260-280 long and 370-400 wide, longer than wide, ornamented with reticulate lines, with four pairs of preanal setae (60-80), two anal setae and one postanal needle-like seta. Peritrematal shields fused to podal shields or sternal shield.

Gnathosoma. Setae *h1* longest, *h2* similar in length to pc and *h3* longer than *h2*. Corniculi long and sword shaped. Deutosternal groove with five rows of denticles (Fig. 3). Epistome one-piece, serrate at the margins and with a conspicuously large central process (Fig. 4). Chelicerae well developed, with a movable digit of about 90 long, and a fixed digit of about 70 long from the base of the dorsal seta. Movable digit with a short and relatively thick pilus dentilis and a dorsal seta. Base of chelicerae with two arthrodial brushes, one of which considerably longer than the other.

Legs. Claws on tarsus I absent (Fig. 5), tarsi of other legs bear claws (Fig. 6). Ventral surface of femur II with distinct short, round and thick process (Fig. 7), femur III with flat large process, coxae with small triangular process. Leg setation of *G. browningi* is shown in Table 1.

Male and immature stages. Not found.

DISCUSSION

Quintero-Gutiérrez and Halliday (2021) present a comprehensive study of the family Parholaspididae and give a clear description of the genus *Gamasholaspis*, which differs from the other genera of parholaspids by the following characters: 1) the peritrematal shield is not fused with the ventrianal shield and the expulsory vesicles are usually absent, 2) the metasternal setae are located on separate metasternal shields or on fused metasternal or endopodal shields, 3) a pair of free and elongate presternal plates are present, 4) the setae on the dorsal shield are often modified, 5) the seta *z1* is absent, 6) the cheliceral seta is expanded, 7) the ventrianal shield is sometimes expanded anteriorly and surrounds the genital shield, and 8) four or more pairs of preanal setae are present on the ventrianal shield.

Gamasholaspis browningi was first described and illustrated on three females and one protonymph by Bregetova and Koroleva (1960) from the soil and litter under trees in Batumi, Georgia, and later this species was reported from different regions of the Palaearctic (Quintero-Gutiérrez and Halliday, 2021; Hajizadeh, 2022). The Turkish specimens of this species were collected in Trabzon province, an area geographically close to the region where the type specimens were found. According to the detailed study of the species, the Turkish specimens are morphologically similar to the specimens originally described from Georgia. The length of the dorsal shield is 700-720 long in the Georgian specimens (see Bregetova and Koroleva 1960) and 720-760 in the Turkish specimens (five females) compared to the previously described specimens. In addition, *G. browningi* is a new addition to the Turkish mite fauna and the first representative of the family in Türkiye.

Statement of ethics approval

Not applicable.

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Conflict of interest

There is no potential conflict of interest.

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